CLAIMS

We claim:

1. A method comprising:

inserting an access point identifier into a mobile registration message, the access point identifier identifying an access point into a wireless network; and

sending the mobile registration message to a wireless network agent, via the access point.

2. The method of claim 1, wherein the access point broadcasts the access point identifier, the method further comprising obtaining the access point identifier from the broadcast before inserting the access point identifier into the mobile registration message.

3. The method of claim 2,

wherein receiving the access point identifier comprises receiving from the access point a broadcast which identifies a service set identifier (SSID), the SSID identifying the access point; and

wherein inserting the access point identifier into the mobile registration message comprises inserting the SSID into the mobile registration message.

4. The method of claim 3, wherein the access point is at least one access point and wherein the SSID is an extended SSID that identifies the at least one access point.

5. The method of claim 1, wherein a mobile station comprises memory for storing the access point identifier, the method further comprising retrieving the access

point identifier from the memory before inserting the access point identifier into the mobile registration message.

6. The method of claim 1, wherein the mobile registration message is a mobile IP registration request.

7. The method of claim 1, wherein the access point identifier is indicative of a location for the access point, the method further comprising:

the wireless network agent sending the access point identifier to an authentication, authorization, accounting (AAA) server; and

the AAA server providing a location-based service to a mobile station based on the access point identifier.

8. The method of claim 1, wherein the wireless network agent is selected from the group consisting of a home agent and a foreign agent.

9. The method of claim 1, wherein the mobile registration message is a request by the mobile station to register with the wireless network agent, the method further comprising:

the wireless network agent inserting the access point identifier into an access request and sending the access request to a AAA server; and

the AAA server receiving the access request and making a determination whether to authorize the mobile station to register with the wireless network agent based on the access point identifier.

10. The method of claim 9, wherein if the AAA server refuses to authorize the mobile station to register with the wireless network agent, the method further comprising:

the AAA server sending to the wireless network agent an access reply that identifies an alternative access point; and

the wireless network agent sending to the mobile station a registration reply that identifies the alternative access point; and

the mobile station establishing communication with the alternative access point.

11. The method of claim 10, further comprising the mobile station sending the mobile registration message to the wireless network agent via the alternative access point.

12. The method of claim 10, further comprising the mobile station sending the mobile registration message to an alternative wireless network agent via the alternative access point.

13. The method of claim 1, wherein the mobile registration message is a request by the mobile station to register with the wireless network agent, the method further comprising:

based on the access point identifier, refusing the request by the mobile station to register with the wireless network agent;

sending to the mobile station a registration reply that identifies an alternative access point identifier for an alternative access point into the wireless network; and

establishing communication with the alternative access point.

14. The method of claim 13, further comprising sending the mobile registration message to an alternative wireless network agent, via the alternative access point.

15. The method of claim 13, further comprising sending the mobile registration message to the wireless network agent, via the alternative access point.

16. The method of claim 1, further comprising inserting an alternative access point identifier in a reply to the mobile registration message.

17. The method of claim 16, further comprising sending the mobile registration message to the wireless network agent via an alternative access point identified by the alternative access point identifier.

18. The method of claim 16, further comprising sending the mobile registration message to an alternative wireless network agent via an alternative access point identified by the alternative access point identifier.

19. The method of claim 1, wherein the mobile registration message is a request by the mobile station to register with the wireless network agent, the method further comprising:

the wireless network agent inserting the access point identifier into an access request and sending the access request to a AAA server; and

the AAA server receiving the access request and, based on the access point identifier, establishing a billing rate for the mobile station.

20. A method comprising:

receiving a mobile registration message via an access point into the wireless network; and

extracting from the mobile registration message an access point identifier, the access point identifier identifying a location of an access point into the wireless network.

21. The method of claim 20, further comprising sending the access point identifier to a AAA server.

22. The method of claim 21, wherein sending the access point identifier to the AAA server comprises sending to the AAA server a message that defines the access point identifier, the message selected from the group consisting of an access request and an accounting record.

23. The method of claim 20, further comprising storing the access point identifier in memory.

24. A method comprising:

inserting into a mobile registration message information selected from the group consisting of a hardware address of a network device, an indication of a traffic channel, an indication of a strength of a signal received, and an indication of a location of the mobile station; and

sending the mobile registration message to a wireless network agent via the access point into the wireless network.

25. A mobile station comprising computer instructions stored in memory and executable by a processor to perform the functions of:

inserting an access point identifier into a mobile registration message, the access point identifier identifying an access point into a wireless network; and

sending the mobile registration message to a wireless network agent, via the access point.

26. The mobile station of claim 25, wherein the access point broadcasts the access point identifier, the mobile station further comprising computer instructions executable by the processor for obtaining the access point identifier from the broadcast before inserting the access point identifier into the mobile registration message.

27. The mobile station of claim 25, wherein the mobile station further comprises computer instructions stored in the memory for retrieving the access point identifier from the memory before inserting the access point identifier into the mobile registration message.

28. The mobile station of claim 27, further comprising computer instructions executable by the processor for performing the functions of:

receiving from the wireless network agent a registration reply that identifies an alternative access point into the wireless network; and

sending the mobile registration message to an alternative wireless network agent, via the alternative access point.

29. The mobile station of claim 27, further comprising computer instructions executable by the processor for performing the functions of:

receiving from the wireless network agent a registration reply that identifies an alternative access point into the wireless network; and

sending the mobile registration message to the wireless network agent, via the alternative access point.

30. The mobile station of claim 25, wherein the access point identifier is an SSID comprising a character string indicative of a location of the access point.

31. The mobile station of claim 30, wherein the access point is at least one access point and wherein the SSID is an extended SSID that identifies the at least one access point.

32. The mobile station of claim 25, wherein the mobile registration message is a mobile IP registration request.

33. The mobile station of claim 32, wherein the mobile IP registration request conforms to a mobile IP standard.

34. The mobile station of claim 25, wherein the computer instructions for performing the function of inserting the access point identifier into the mobile registration message comprise computer instructions for inserting the access point identifier into a field selected from the group consisting of normal vendor specific extension field and a critical vendor specific extension field.

35. The mobile station claim 25,

wherein the access point identifier is an SSID; and

wherein the normal vendor specific extension field and the critical vendor specific field comprise a vendor code and a type for the SSID.

36. The mobile station of claim 25,

wherein the access point identifier is an SSID; and

wherein a length field of the normal vendor specific extension field or the critical vendor specific field is a length of the SSID.

37. The mobile station of claim 25, wherein a broadcast by the access point identifies the access point identifier.

38. A wireless network comprising:

a mobile station;

a wireless network agent;

the mobile station comprising computer instructions stored in memory and executable by a processor for performing the functions of:

inserting an access point identifier into a mobile registration message, the access point identifier identifying an access point into the wireless network; and

sending the mobile registration message to a wireless network agent, via the access point;

the wireless network agent comprising computer instructions stored in memory and executable by a processor for performing the functions of:

receiving the mobile registration message;

extracting from the mobile registration message the access point identifier; and

sending to a AAA server the access point identifier.

39. The system of claim 38, wherein the wireless network agent is selected from the group consisting of a home agent and a foreign agent.

40. The system of claim 38,

wherein the AAA server refuses to authorize the mobile station to register with the wireless network agent; and

wherein the AAA comprises computer instructions stored in memory and executable by a processor for performing the function of sending to the wireless network agent an alternative access point identifier.

41. The system of claim 38, wherein the AAA server comprises computer instructions stored in memory and executable by a processor for performing the function of receiving the access point identifier from the wireless network agent and, based on the access point identifier, establishing a billing rate for the mobile station.

42. The system of claim 38, wherein the AAA server comprises computer instructions stored in memory and executable by a processor for performing the function of providing a location-based service to a mobile station based on the access point identifier.

43. The system of claim 38, wherein the AAA server comprises computer instructions stored in memory and executable by a processor for performing the functions of receiving the access point identifier and making a determination whether to authorize the mobile station to register with the wireless network agent based on the access point identifier.

44. The system of claim 38, wherein the access point is at least one access point.

45. A server comprising computer instructions stored in memory and executable by a processor for performing the functions:

receiving a mobile registration message via an access point into the wireless network; and

extracting from the mobile registration message an access point identifier, the access point identifier identifying a location of an access point into the wireless network.

46. The server of claim 45, further comprising computer instructions for sending the access point identifier to a AAA server.

47. The server of claim 46, wherein the computer instructions for sending the access point identifier to the AAA server comprises computer instructions for sending to the AAA server a message that defines the access point identifier, the message selected from the group consisting of an access request and an accounting record.

48. The server of claim 45, further comprising storing the access point identifier in memory.

49. The server of claim 45, wherein the server is a packet data serving node.

50. A system comprising:

a processor;

memory; and

computer instructions stored in the memory and executable by the processor for performing the functions of:

receiving from a wireless network agent, an access point identifier into a wireless network; and

using the access point identifier to provide a location-based service to a mobile station.

51. The system of claim 50, wherein using the access point identifier to provide the location-based service comprises:

based on the access point identifier, refusing to authorize the mobile station to register with the wireless network agent; and

sending to the wireless network agent an alternative access point identifier into the wireless network.

52. The system of claim 50, wherein using the access point identifier to provide the location-based service comprises establishing, based on the access point identifier, a billing rate for the mobile station.

53. The system of claim 50, wherein using the access point identifier to provide the location-based service comprises making a determination whether to authorize the mobile station to register with the wireless network agent based on the access point identifier.

54. A system comprising computer instructions stored in memory and executable by a processor for performing the functions of:

inserting into a mobile registration message information selected from the group consisting of a hardware address of a network device, an indication of a traffic channel, an indication of a strength of a signal, and an indication of a location of the mobile station; and

sending the mobile registration message to a wireless network agent via the access point into the wireless network.